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**SET - 1** 

Code No: RT31034 (R13)

## III B. Tech I Semester Supplementary Examinations, May - 2018 INSTRUMENTATION & CONTROL SYSTEMS

		(Mechanical Engineering)	
	Time:	: 3 hours Max.	Marks: 70
		Note: 1. Question Paper consists of two parts ( <b>Part-A</b> and <b>Part-B</b> ) 2. Answering the question in <b>Part-A</b> is compulsory 3. Answer any <b>THREE</b> Questions from <b>Part-B</b>	
		<u>PART -A</u>	
1	a)	What do you mean by random errors?	[4M]
	b)	List out the advantages of thermocouples.	[4M]
	c)	State the working principle of piezo-electric transducer for the measurement of acceleration.	[4M]
	d)	List some practical examples where strain measurement becomes essential.	[3M]
	e)	Explain the working principle of pneumatic load cell for the measurement of force.	
	f)	Define the process control system and automatic control systems.  PART –B	[3M]
2	a)	Describe the elements present in the generalized measuring system block with the suitable examples.	[8M]
	b)	Explain the working principle of variable-inductance transducer with a near sketch and also list out its advantages.	[8M]
3	a)	Explain how pyrometric cones are used for the measurement of temperature.	[8M]
	b)	Explain with the help of suitable sketches, the difference between a bellows gauge and a diaphragm gauge for pressure measurement.	[8M]
4	a)	Explain the working principle of operation of turbine flow with neat sketch and also list out its advantages and disadvantages.	[8M]
	b)	Explain the measurement of vibration by the reed vibrometer, and the stroboscope.	[8M]
5	a)	Explain the principle on which the operations of an electrical resistance strain gauge with neat sketch.	[8M]
	b)	What do you understand by a strain rosette? How is it used?	[8M]
6	a)	Explain the working of psling psychrometer with neat sketch and also list out its limitations in usage.	[8M]
	b)	Describe the constructional and operation of rope brake type of absorption dynamometer.	[8M]
7	a)	Explain the functions of each component of generalized feedback control system with neat block diagram.	[8M]
	b)	Suggest a simple control system which automatically turns on a room lamp at dusk and turn it off in day light. Draw the schematics and block diagram of the suggested control system.  *****	